

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-025077**Date Inspected:** 08-Jul-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

<b>CWI Name:</b>	William Sherwood and Pat Swain			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>

**Bridge No:** 34-0006**Component:** SAS Tower**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At OBG 11W/12W top deck plate 'A1 to A3' outside, QA randomly observed ABF welder James Zhen continuing to perform 1G (flat position) Submerged Arc Welding (SAW) welding fill pass on the Complete Joint Penetration (CJP) splice butt joint. The welder was utilizing F7A6-EM12K-H8, 3.2mm electrode with corresponding Esab OK Flux 10.62 flux and implementing Caltrans approved Welding Procedure Specification (WPS)

ABF-WPS-D15-4042B-1. The joint being welded has a single V-groove butt joint with backing bar. The plates were preheated to more than 150 degree Fahrenheit using Miller Proheat 35 Induction Heating System heater blankets located on top of the plate prior and moving it to the side of the joint during welding. Welding parameters were monitored by ABF/QC William Sherwood. QA noted the welding parameters were 560 amperes, 32.5 volts and travel speed of 395 mm per minute with calculated heat input of 2.76Kj per mm. The workmanship and appearance of the completed fill pass deemed satisfactory. At the end of the shift, SAW fill pass welding was still continuing and should remain tomorrow.

At OBG 11W/12W top deck plate '31 to A5' outside, QA randomly observed ABF welder Todd Jackson continuing to perform 1G (flat position) Submerged Arc Welding (SAW) welding fill pass on the Complete Joint Penetration (CJP) splice butt joint. The welder was utilizing F7A6-EM12K-H8, 3.2mm electrode with corresponding Esab OK Flux 10.62 flux and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1. The joint being welded has a single V-groove butt joint with backing bar. The

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## WELDING INSPECTION REPORT

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plates were preheated to more than 150 degree Fahrenheit using Miller Proheat 35 Induction Heating System heater blankets located on top of the plate prior and moving it to the side of the joint during welding. Welding parameters were monitored by ABF/QC William Sherwood. QA noted the welding parameters were 550 amperes, 32.5 volts and travel speed of 400 mm per minute with calculated heat input of 2.68Kj per mm. The workmanship and appearance of the completed fill pass deemed satisfactory. At the end of the shift, SAW fill pass welding was still continuing and should remain tomorrow.

At OBG 11W/12W bottom plate 'D1' (0mm to 700mm) inside, QA randomly observed ABF/JV qualified welder Hua Qiang Hwang perform 1G manual fill pass to cover pass welding on bottom plate 'D1' where the Submerged Arc Welding (SAW) track mounted wire feeder has limited access. The welder was utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3040A-1. The joint had a single V-groove butt joint design with backing bar. The plate with the backing bar was preheated to greater than 150 degrees Fahrenheit using Miller Proheat 35 Induction Heating System heater blankets located at the bottom of the plate prior/during welding. During the shift, ABF QC Pat Swain was noted monitoring the welder. The measured welding parameters were 290 amperes, 24.1 volts with travel speed of 572mm per min and calculated heat input of 0.73 Kj per mm which appears in compliance to the approved WPS. The welder has completed the FCAW-G cover pass welding during the shift.

At OBG 11W/12W bottom plate 'D2' (2950mm to 4250mm) inside, QA randomly observed ABF/JV qualified welder Wai Kitlai perform 1G manual fill pass to cover pass welding on bottom plate 'D2' where the SAW track mounted wire feeder has limited access. The welder was utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3040A-1. The joint had a single V-groove butt joint design with backing bar. The plate with the backing bar was preheated to greater than 150 degrees Fahrenheit using Miller Proheat 35 Induction Heating System heater blankets located at the bottom of the plate prior/during welding. During the shift, ABF QC Pat Swain was noted monitoring the welder. The measured welding parameters were 290 amperes, 24.1 volts with travel speed of 572mm per min and calculated heat input of 0.73 Kj per mm which appears in compliance to the approved WPS. The welder has completed the FCAW-G cover pass welding during the shift.

At Tower Base Elevation 13Meters Shear Plate Electro Slag Welding (ESW);

ABF QC Jesse Cayabyab and this QA performed a joint fit up verification on the Electro Slag Welding (ESW) T-joint W-042 at location 'M' scheduled to be welded tomorrow July 9, 2011. The measured root gap was noted 17mm minimum and 23mm maximum. There was no lesser than 16mm nor more than 25mm root gap noted from the bottom to the top of the T-joint. With the measurements that were recorded during the fit up verification, the fit up of the weld T-joint was deemed in compliance to the contract requirements.

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# WELDING INSPECTION REPORT

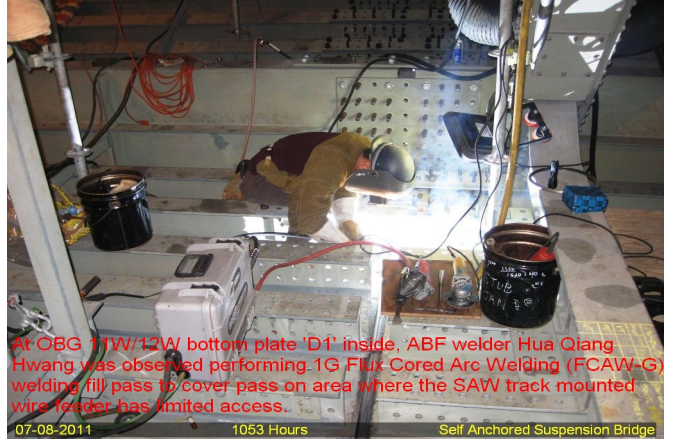
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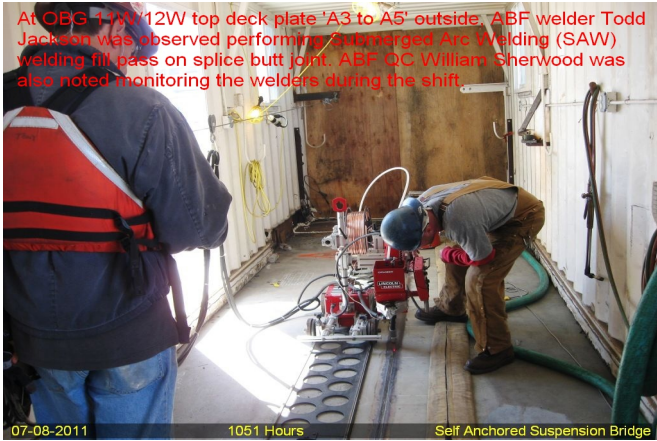
At OBG 11W/12W top deck plate 'A1 to A3' outside, ABF welder James Zhen was observed performing Submerged Arc Welding (SAW) welding fill pass on splice butt joint.



At OBG 11W/12W bottom plate 'D1' inside, ABF welder Hua Qiang Hwang was observed performing 1G Flux Cored Arc Welding (FCAW-G) welding fill pass to cover pass on area where the SAW track mounted wire feeder has limited access.



At OBG 11W/12W top deck plate 'A3 to A5' outside, ABF welder Todd Jackson was observed performing Submerged Arc Welding (SAW) welding fill pass on splice butt joint. ABF QC William Sherwood was also noted monitoring the welders during the shift.



At OBG 11W/12W top deck plate 'A1 to A5' outside, ABF personnel were noted using the Miller Proheat 35 Induction-Heating System to preheat the plates to required temperature of more than 150 degrees Fahrenheit prior FCAW-G welding.



## Summary of Conversations:

No significant conversation occurred today.

## Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

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**Reviewed By:** Levell, Bill

QA Reviewer